REMARKS

Claims 15, 16, 32, 33, 35, 38, 39 and 40 have been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **October 8, 2003**.

Claim Objections

Claims 13, 15, 16, 29, 32-35, 38-40 are objected to because of minor informalities. Taking the Examiner's comments into consideration claims 13, 15, 16, 29, 32-35, 38-40 have been amended. Therefore, withdrawal of the objection to the claims is requested.

Claim Rejections under 35 USC §112

Claims 15, 18-28, 29-32, 34, 35, 38, 39 and 40 are rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the Examiner is objecting to the term "a lot" as being vague and indefinite. Taking the Examiner's comments into consideration claims 15, 29, 32-35 and 38-40 have been amended. Therefore, withdrawal of the rejection of claims 15, 18-28, 29-32, 34, 35, 38, 39 and 40 under 35 USC §112, second paragraph, is respectfully requested.

Claim Rejections under 35 USC §102

Claims 15, 16, 28, 32-34 and 38-39 are rejected under 35 USC §102(b) as being anticipated

by Nakabayashi (U.S. Patent No. 5,675,672).

Nakabayashi describes a two-dimensional linker that is able to take a document (32) that

is partitioned and scanned by a first scan (28) and a second scan (30). An optical character reader

(12) is able to recognize the ASCII characters in the two documents and saves each into a first

memory (14) and a second memory (16). An aligner (20) identifies the duplicate characters in

each document and eliminates the duplicates from one of the documents. A linking means then

takes the two documents and forms a single documents stored in a third memory (26). As

illustrated in figure 4, the aligner (20) searches for duplicated phrases. In addition, as illustrated

in figure 5, the aligner (20) may search for duplicated columns of characters.

The present invention is a document processing device in which a large document may be

partitioned into a number of regions which are scanned in separately. An overlapping detecting

unit detects overlapping sections of the document images by comparing positions and sizes of

character regions in the document images.

In the specification pages, are disclosed three invention embodiments, i.e., detecting an

overlapping position of document images from a comparison in respect of positions and sizes of

character regions {the first invention), detecting an overlapping position from line images in

regions judged to be low graphics-ration regions after partitioning respective document images

Into a plurality of vertical and horizontal regions and Judging regions that contain a larger

number of line images as low graphics-ratio regions (the second invention) and a device having a

setting unit allowing a setting, on a display screen, of whether or not to merge automatically the

plurality of document images (the third invention).

By way of clarifying differences between the rejected independent claims, claim 15 represents the second invention, claim 16 represents the second invention added to which the character recognition unit and claim 29 represents the second and third inventions combined, whereas claims 32-35 are method claims and claims 38-40 are medium claims. The first invention is represented by claim 2 and has already been judged allowable.

The prior art of record does not disclose the following:

(a) Region partitioning unit partitions a document into a plurality of vertical and horizontal regions.

(b) Line image extracting unit extracting line images containing only character images from the plurality of vertical and horizontal regions partitioned.

(c) Region Judging unit comparing between the number of line images found to contain only character images in a group of regions vertically partitioned and the number of such line images found in a group of regions horizontally partitioned, and judging the group that hold more line images found to contain only character images as a low graphics-ration region group.

(d) Overlapping detecting unit detecting an overlapping position by a comparison of line Images in the low graphics-ratio regions of the two document images.

Independent Claims 15, 16, 32-34 and 38-39 patentably distinguish over the prior art relied upon by reciting, as exemplified by claim 15,

> "A document image processing device comprising: region partitioning unit partitioning first and second document images which are partitioned and read, respectively into a plurality of vertical and horizontal regions; line image extracting unit extracting line images containing only character images from the plurality of vertical and horizontal regions partitioned by said region partitioning unit; region

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judging unit comparing between the number of line images containing only character images in the plurality of regions vertically partitioned and the number of such line images found in the plurality of regions horizontally partitioned, and judging the plurality of regions that hold more line images found to contain only character images as a low graphics-ratio region; overlapping detecting unit detecting an overlapping position between the first and second document images, based on positions of character regions whose matching degrees are high by making a comparison between a character region of a line image in a region judged as a low graphics-ratio region by region judging unit and a character region of a line image in a corresponding region of the second document image; and image merging unit merging first and second document images at the overlapping position detected by said overlapping detecting unit." (Emphasis Added)

Further, neither *Nakabayashl. Matsuda* nor *Miyamoto* describes:

(b) extracting line images containing only character images from the plurality of vertical and horizontal regions partitioned;

(c) comparing between the number of line images found to contain only character images in a group of regions vertically partitioned and the number of such line images found in a group of regions horizontally partitioned, and judging the group that hold more line images found to contain only character Images aa a low graphics-ration region group;

(d) detecting an overlapping position in a manner associated with line images in the low graphics-ratio regions of the two document images.

Therefore, withdrawal of the rejection of Claims 15, 16, 28, 32-34 and 38-39 under 35 USC §102(b) as being anticipated by Nakabayashi (U.S. Patent No. 5,675,672) is respectfully requested.

Claims 15, 16, 32-34 and 38-39 are rejected under 35 USC §102(a) as being anticipated by either one of the following two references: Matsuda (JP Published Patent Appln. 11-196255) or Miyamoto et al. (JP Published Patent Appln. 11-66234).

Matsuda describes an image processing method in which character codes and their positions are detected at the borders of images. Based upon these characters detected and their positions, the overlap between images is determined. The images are then merged based upon the overlap detected.

Miyamoto describes a method for merging images based upon circumscribing a rectangle around an overlapping character pattern. The overlapping images are then merged.

For the same reasons discussed earlier independent Claims 15, 16, 32-34 and 38-39 patentably distinguish over the prior art relied upon by reciting, as exemplified by claim 15,

> "A document image processing device comprising: region partitioning unit partitioning first and second document images which are partitioned and read, respectively into a plurality of vertical and horizontal regions; line image extracting unit extracting line images containing only character images from the plurality of vertical and horizontal regions partitioned by said region partitioning unit; <u>region judging unit comparing between the number of line images containing only character images in the plurality of regions vertically partitioned and the number of such line images found in the plurality of regions horizontally partitioned, and judging the plurality of regions that hold more line images found to contain only character images as a low graphics-ratio region;</u> overlapping detecting unit detecting an overlapping position between the first and second document images, based on positions of character regions whose matching degrees are high <u>by making a comparison between a character region of a line image in a region judged as a low graphics-ratio region by region judging unit and a character region of a line image in a corresponding region of the second document image;</u> and image merging unit merging first and second document images at the overlapping position detected by said overlapping detecting unit." (Emphasis Added)

Therefore, withdrawal of the rejection of Claims 15, 16, 32-34 and 38-39 under 35 USC §102(a) as being anticipated by either one of the following two references: Matsuda (JP Published Patent Appln. 11-196255) or Miyamoto et al. (JP Published Patent Appln. 11-66234) is respectfully requested.

Claim Rejections under 35 USC §103

Claims 29-32, 35 and 40 are rejected under 35 USC §103(a) as being unpatentable over Nakabayashi.

Independent claims 29, 32, 35 and 40 patentably distinguish over the prior art relied by reciting, as exemplified by claim 32,

> "A document image merging method, comprising: partitioning first and second document images from among a plurality of document images which are partitioned and read, respectively into a plurality of vertical and horizontal regions; extracting line images containing only character images from the plurality of vertical and horizontal regions partitioned; comparing between the number of line images containing only character images in the plurality of regions vertically partitioned and the number of such line images found in the plurality of regions horizontally partitioned, and judging the plurality of regions that hold more line images found to contain only character images as a low graphics-ratio region; detecting an overlapping position between the first and second document images, based on positions of character regions whose matching degrees are high by making a comparison between a character region of a line image in a region judged as the low graphics-ratio region and a character region of a line image in a corresponding region of the second document image; and merging the first and second document images at the detected overlapping position." (Emphasis Added)

Therefore, withdrawal of the rejection of Claims 29-32, 35 and 40 under 35 USC §103(a) as being unpatentable over Nakabayashi is respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, claims 15, 16, 32, 33, 35, 38, 39 and 40, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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